

Prasanna Sand

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Education

Master of Science in Computer Science and Engineering | Santa Clara University

September 2023 - June 2025

Courses: Distributed Systems, Algorithms, Advanced Operating Systems, Advance Computer Architecture, Object Oriented Analysis Design and Programming, Pattern Recognition and Data Mining, Machine Learning, Computer Networks, Solutions Architecture and the Cloud.

Master of Business Administration (Specialization in Finance) Savitribai Phule Pune University | Pune, India

July 2021 – August 2023

Courses: Securities Analysis & Portfolio Management, Corporate Financial Restructuring, Enterprise Performance Management, Financial Laws, Global Strategic Management, Strategic Cost Management, Financial Markets And Banking Operations.

B. Tech in Computer Science and Engineering | MIT World Peace University | Pune, India

July 2018 – May 2021

Courses: Design and analysis of algorithms, Database Systems, Operating Systems, Computer Architecture, High Performance Computing, Artificial Intelligence, Data warehouse and mining, System Software and Compilers, Computer Vision, Natural Language Processing.

Skills

Languages: C, C++, Python, HTML, CSS, Java, JavaScript, SQL, Swift.

Software and Tools: Docker, Git, JIRA, Postman, AWS, Google Cloud, IBM SPSS Statistics, Firebase.

Libraries and Framework: TensorFlow, Keras, Kivy, OpenCV, React, Whisper, Flask, Tkinter, Express, Spring Boot, Flutter.

Database: MySQL, DuckDB, MongoDB (NoSQL).

Core competencies: Full Stack, Frontend, Backend, DevOps, Microservices, Distributed Systems, High-Concurrency Optimization, REST APIs, Agile.

Experience

Full Stack Developer | Frugal Innovation Hub | Santa Clara University | Santa Clara, California

Jan 2025 – Present

- Developed and deployed cross-platform applications using Flutter, Firebase, and Node.js, owning both frontend UI and backend service layers.
- Designed modular architecture (presentation, domain, data layers), improving code maintainability and enabling 85%+ unit test coverage.
- Automated CI/CD pipelines with GitHub Actions, supporting multi-platform builds and streamlined QA workflows.
- Collaborated with stakeholders to define technical solutions from evolving product requirements, delivering stable and scalable features.

Computer Vision Intern | NextLeap Aeronautics | Bangalore, India

June 2020 – August 2020

- Implemented a collision prevention system using YOLO for real-time obstacle detection, identifying objects and power lines to enhance UAV navigation.
- Developed advanced power line detection capabilities with techniques such as PCNF Filtering, Gabor Filter, and Hough Transform, ensuring reliable distinction from other linear structures.
- Researched methods for high-speed obstacle avoidance, including Pushbroom Stereo, and explored multi-sensor fusion techniques for potential autonomous landing and return-to-home capabilities in GPS-denied environments.

Projects

BrowseAble – AI Accessibility Chrome Extension

Apr 2025

- Developed a Chrome extension using React and Gemini API to adapt web pages for neurodivergent users (ADHD, Autism, SPD).
- Implemented user-role authentication (user vs. caretaker) and integrated Firebase for personalized accessibility features.
- Designed dynamic content overlays and simplified layouts using AI-generated DOM adaptation for inclusive browsing.
- Enabled real-time summarization, font adjustments, visual simplification, and caregiver dashboards for better accessibility.

Distributed and Hybrid Query Engine for DuckDB

November 2024 – Present

- Built an extension for DuckDB to support distributed and hybrid query processing, enhancing query execution capabilities across multiple nodes.
- Designed a framework for data distribution and query optimization, tackling challenges like varied hardware and uneven network conditions to achieve balanced workloads and optimal performance.

Badminton Shot Classification using ML

December 2024

- Built a machine learning pipeline to classify badminton shots (e.g., smashes, drops, clears) using keypoint data extracted from player motion videos.
- Engineered custom features such as joint angles, movement speed, and shot trajectory using OpenPose + NumPy preprocessing.
- Trained and evaluated multiple classifiers (Random Forest, SVM, and LSTM) achieving 87% accuracy on real match clips.
- Enabled fine-grained feedback for athletic training by identifying shot type and posture inconsistencies in real-time.

AllBank – AI-Driven Inclusive Banking Solution

November 2024

- Developed a holistic financial management app using React Native and Firebase, offering traditional banking services, goal-based savings, QR code payments, and AI-powered financial insights to empower individuals and small businesses.
- Integrated Google Gemini AI and NLP technologies to deliver real-time financial assistance, personalized analytics, and human-like conversational support, enhancing accessibility and decision-making for underbanked populations.

Online Ordering App, DevC 2.0 Hackathon

June 2024 – July 2024

- Developed an AI-powered food ordering app with personalized meal recommendations based on user health data, dietary restrictions, and calorie goals, using Express.js for backend architecture and React.js for a responsive user interface.
- Leveraged MongoDB for efficient data storage and Node.js to handle server-side logic, ensuring seamless data flow and user interactions.
- Used Docker to containerize and deploy the app, optimizing performance and scalability across multiple environments.

Publications

Brainwave Controlled Wheelchair with Obstacle Detection and Alerting System | IJREAM

May 2021

Authored a research paper on an innovative brainwave-controlled wheelchair system designed to improve mobility and safety for individuals with severe coordination disabilities. The paper highlights the integration of EEG-based attention level detection, Morse code communication through eye blinks, and adaptive obstacle detection using IoT technologies, offering a transformative approach to assistive mobility solutions.

Applications of Computer Vision in Agriculture | IJEAST

Jan 2021

Co-authored a paper exploring drone-based and ML-enhanced computer vision solutions for monitoring crop health, weed detection, yield estimation, and environmental sensing using aerial image segmentation and CNNs.

Certificates and Achievements

AWS Certified Solutions Architect – Associate | Certified Business Analytics | DeepLearning.AI Tensorflow Developer | Certified Google Cloud Engineer | Hackathons – **Winner** (HackUTD 2024 - Goldman Sachs Track), **Finalist** (TikTok TechJam Hackathon 2024, ByteDance Ltd.) | **Co-Founder**, Well-Whizer (Wearable technology to promote AI for Mental Health and track client's essential information to assist the counselors)